ATOS Data Collection Tool (DCT) XML Schema Version 2.0

Background

Due to the evolution of the ATOS system and requests by interested stakeholders, the XML data format of the ATOS Data Collection Tools (DCT) has been modified. The new DCT data format is a complete restructuring of the XML which will adhere to a published DCT XML Schema. Both the new DCT XML and corresponding schema will be available via the FAA public web site. The new DCT XML includes the following changes/enhancements:

- Latest updates to the structure and formatting of the DCTs
- Hierarchical structure to enable easier viewing and parsing of the XML
- Well defined and documented schema based on current XML schema standards
- Ability to validate the XML against a published schema
- Separate XML schema definition for data collection results to enable automated data collection of question results.

Disclaimer

Note that the new XML format is distributed "as-is" and without technical support. Also note that XSLT is not provided to transform between the old and new DCT XML formats.

Summary

This document describes the ATOS DCT XML schema and associated files. The schema is made up of three main files:

- AtosDct.xsd – this schema defines the structure of a DCT document, including the most recent changes to the data collection tools. The schema describes the data elements and attributes of the EPI and SAI documents (and PDFs) available on the FAA public web site.
- AtosDctResults.xsd – this schema defines an XML document for collecting DCT results data. It has been separated from the main DCT document in order to separate the schema for submitting data collection results from the "read only" main DCT document. Note that the results schema is considered a working draft as it currently only defines the data elements required for collecting and submitting certification applicant SAI data, only a partial set of the data structures required to submit DCT data. If the schema were to be eventually used for data collection beyond this scope it would need to be enhanced.
- AtosDctResultTypes.xml – This file provides an XML representation of all possible answer types for DCT questions. This file is currently maintained manually with the assumption that the possible answer types are for the most part static. This file can be used by applications interested in developing data entry tools for DCT data collection.

NOTE: The AtosDct.xsd schema imports the AtosDctResults.xsd schema and it expects the file to be located in the same directory.

Relationship of the Schema Files

Generally the schema files are independent with the exception of the AtosDct.xsd including a reference to a section of the AtosDctResults.xsd results schema. The following picture from a DCT XML file illustrates this:

```
<Question QuestionId="106875">
 <QuestionLabel>1.1</QuestionLabel>
 <QuestionName IsHtmlFormat="true">&lt;P&gt;Do procedures require hand fire extinguishers of an approved type to be conveniently located and
and each extinguisher must contain the type and quantity of extinguishing agent for fires likely to occur in the following areas (as applicable): &lt;/P&gt;
&lt;UL&gt;
&lt;LI&gt;Flight deck, &lt;/LI&gt;
&lt;LI&gt;Passenger compartment, &lt;/LI&gt;
&lt;LI&gt;Galley compartments, and &lt;/LI&gt;
&lt;LI&gt;Class E cargo compartments?&lt;/LI&gt;&lt;/UL&gt;</QuestionName>
 <QuestionNotes>
  <QuestionNote>The appropriate number of fire extinguishers must be provided according to the aircraft capacity.</QuestionNote>
  <QuestionNote>At least one hand fire extinguisher in the passenger compartment must contain Halon 1211.</QuestionNote>
 </QuestionNotes>
 <QuestionRevNumber>2</QuestionRevNumber>
 <QuestionRevDate>09/15/2009</QuestionRevDate>
 <dctr:QuestionResult QuestionId="106875" ResultTypes="Result_Yes_No Explanation Manual_Ref Ddm_SAI_Sect_1" />
 <QuestionSrrs>
 <QuestionSrr>121.309(c)</QuestionSrr>
 </QuestionSrrs>
 <QuestionCfrs />
 <QuestionKinds>
  <QuestionKind>Flag</QuestionKind>
  <QuestionKind>Supplemental</QuestionKind>
  <QuestionKind>Domestic</QuestionKind>
 </QuestionKinds>
 <QuestionJtis>
  <QuestionJti JtiId="52781" DisplayOrder="1">
   <JtiOrder>32</JtiOrder>
   <JtiName>Check that the certificate holder's process includes instructions and information necessary to allow the personnel concerned to perfo
to provide aircraft with at least one hand fire extinguisher, conveniently located, for use in each galley located in a compartment other than a passenger
</JtiName>
   <JtiSources>
    <JtiSource>121.135(a)(1)</JtiSource>
    <JtiSource>121.309(c)(3)</JtiSource>
   </JtiSources>
  </QuestionJti>
```

Each question has a <dctr:QuestionResult> element (note the "dctr" namespace) which contains the associated 'ResultTypes' attribute. The values of the 'ResultTypes' attribute can be looked up in the AtosDctResultTypes.xml, providing the answer type(s) information, for support of automated data collection. For example, question 1.1 in the above picture shows result types of "Result_Yes_No Explanation Manual_Ref Ddm_SAI_Sect_1". This is a space-separated list of result type ID's, the definitions of which exist in the AtosDctResultTypes.xml file. The result type ID "Result_Yes_No" is shown below:

```xml
<ResultType Id="Result_Yes_No" FieldName="Result" Alias="Result" FieldType="Choice">
  <Description>Result is a selection from the range of choices: Yes, No</Description>
  <FieldDef>
    <Choice Name="Result" Alias="Result" MultiSelect="false">
      <Option Value="Y" Alias="Yes" ShortName="Yes"/>
      <Option Value="N" Alias="No, Explain" ShortName="No, Explain"/>
    </Choice>
  </FieldDef>
</ResultType>
```

NOTE: Even though the AtosDctResults.xsd schema is considered a working draft, the "ResultTypes" attribute values are correct as of this release of the schema and can be used to accurately determine the valid answer types for a question.

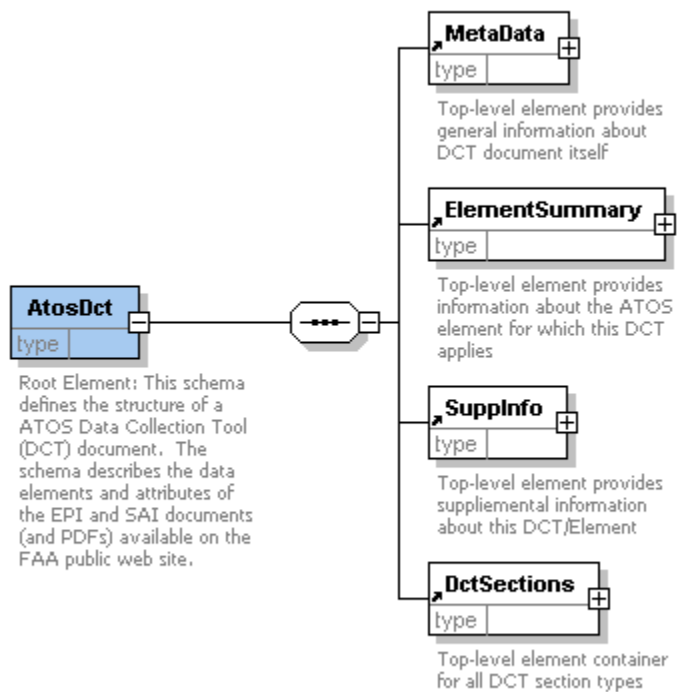## Notable changes to the 'old' XML and the 'new' Public DCT XML

Following is a list of notable exceptions of the new schema to the old DCT XML on the FAA public web site:

- There are few common elements or attributes between to the two schemas.
- The new schema is more hierarchical and uses camel case for element and attribute naming.
- Some DCT XML elements now contain (encoded) HTML as the text value of the element. These elements contain the attribute "IsHtmlFormat=true" which can be used as an indicator to parsers that the element contains HTML.
- The new schema does not include ActivityDetail.
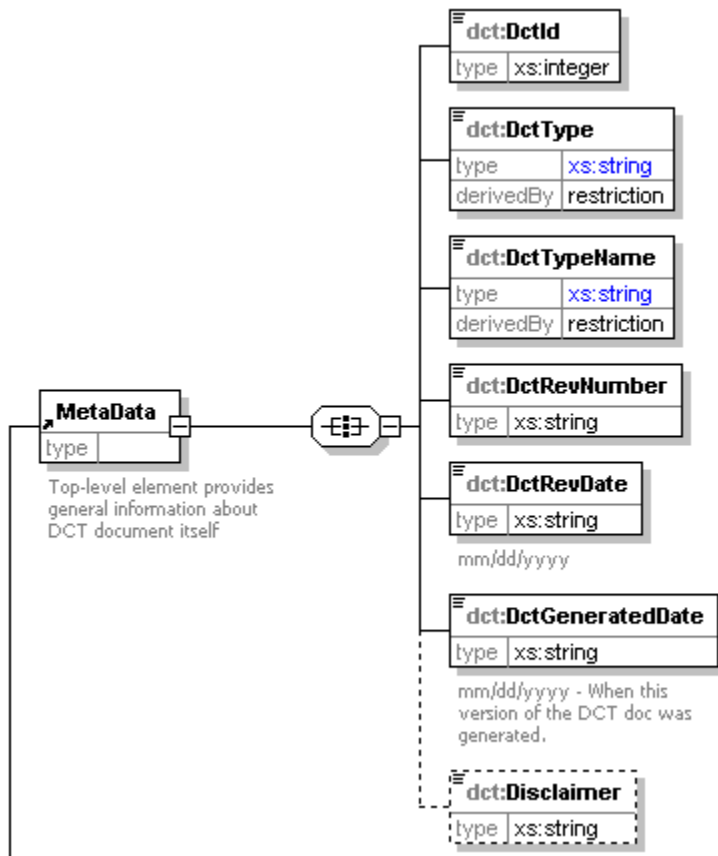- The new schema does not include ATA Codes.

High Level Schema – AtosDct.xsd

The following is a series of images depicting the AtosDct schema from top to bottom. See the AtosDct.xsd file for more detail.
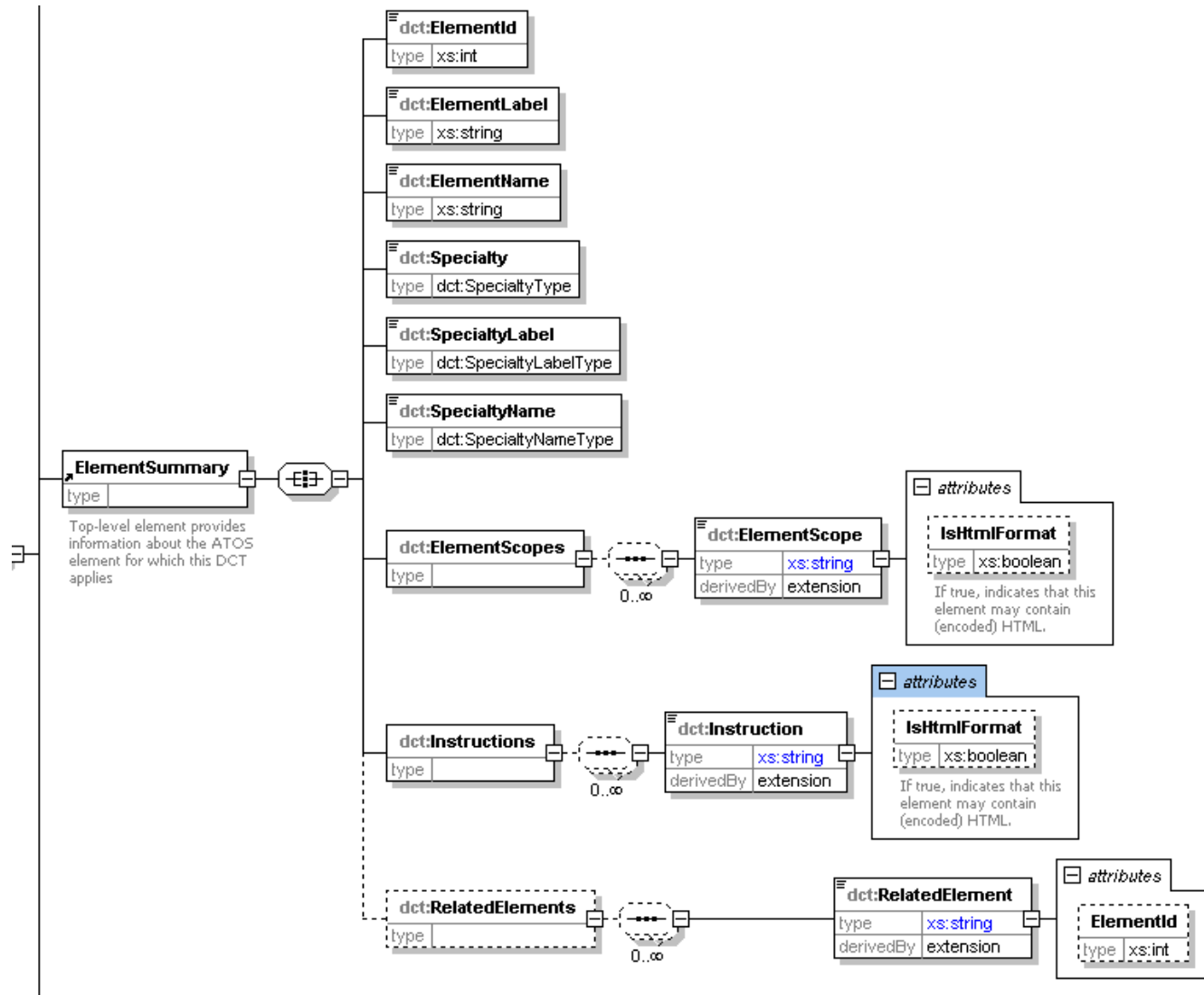
Top level view

AtosDct
type

Root Element: This schema defines the structure of a ATOS Data Collection Tool (DCT) document. The schema describes the data elements and attributes of the EPI and SAI documents (and PDFs) available on the FAA public web site.

MetaData
type

Top-level element provides general information about DCT document itself

ElementSummary
type

Top-level element provides information about the ATOS element for which this DCT applies

SuppInfo
type

Top-level element provides supplemental information about this DCT/Element

DctSections
type

Top-level element container for all DCT section types

MetaData

dct:DctId
type	xs:integer

dct:DctType
type	xs:string
derivedBy	restriction

dct:DctTypeName
type	xs:string
derivedBy	restriction

dct:DctRevNumber
type	xs:string

dct:DctRevDate
type	xs:string

mm/dd/yyyy

dct:DctGeneratedDate
type	xs:string

mm/dd/yyyy - When this version of the DCT doc was generated.

dct:Disclaimer
type	xs:string

MetaData
type	

Top-level element provides general information about DCT document itself
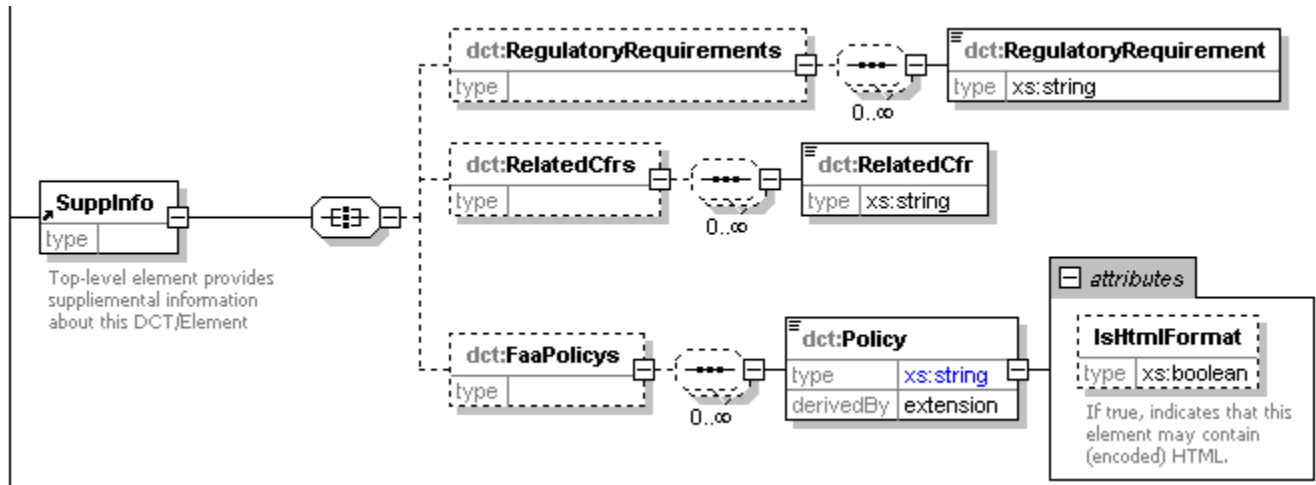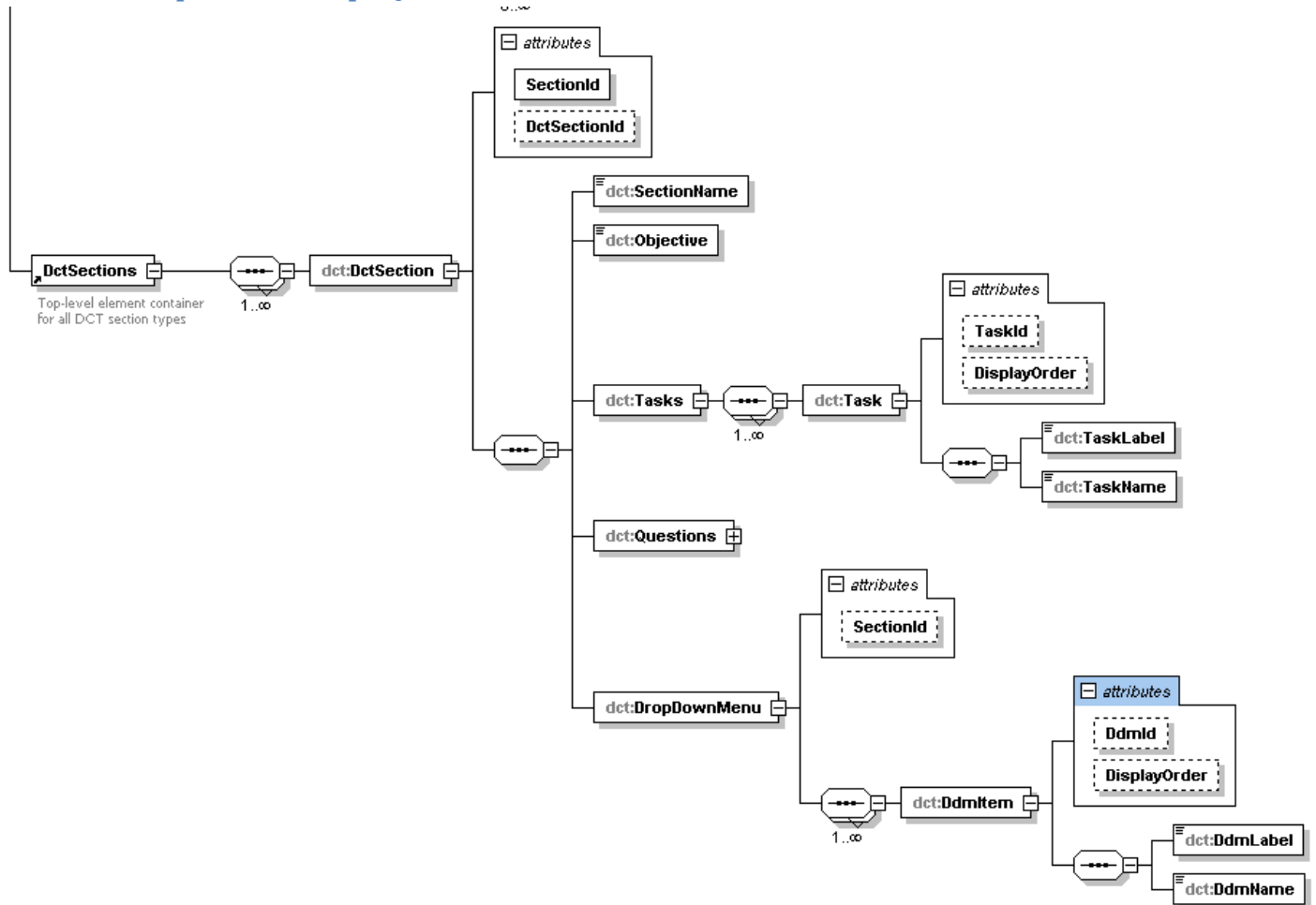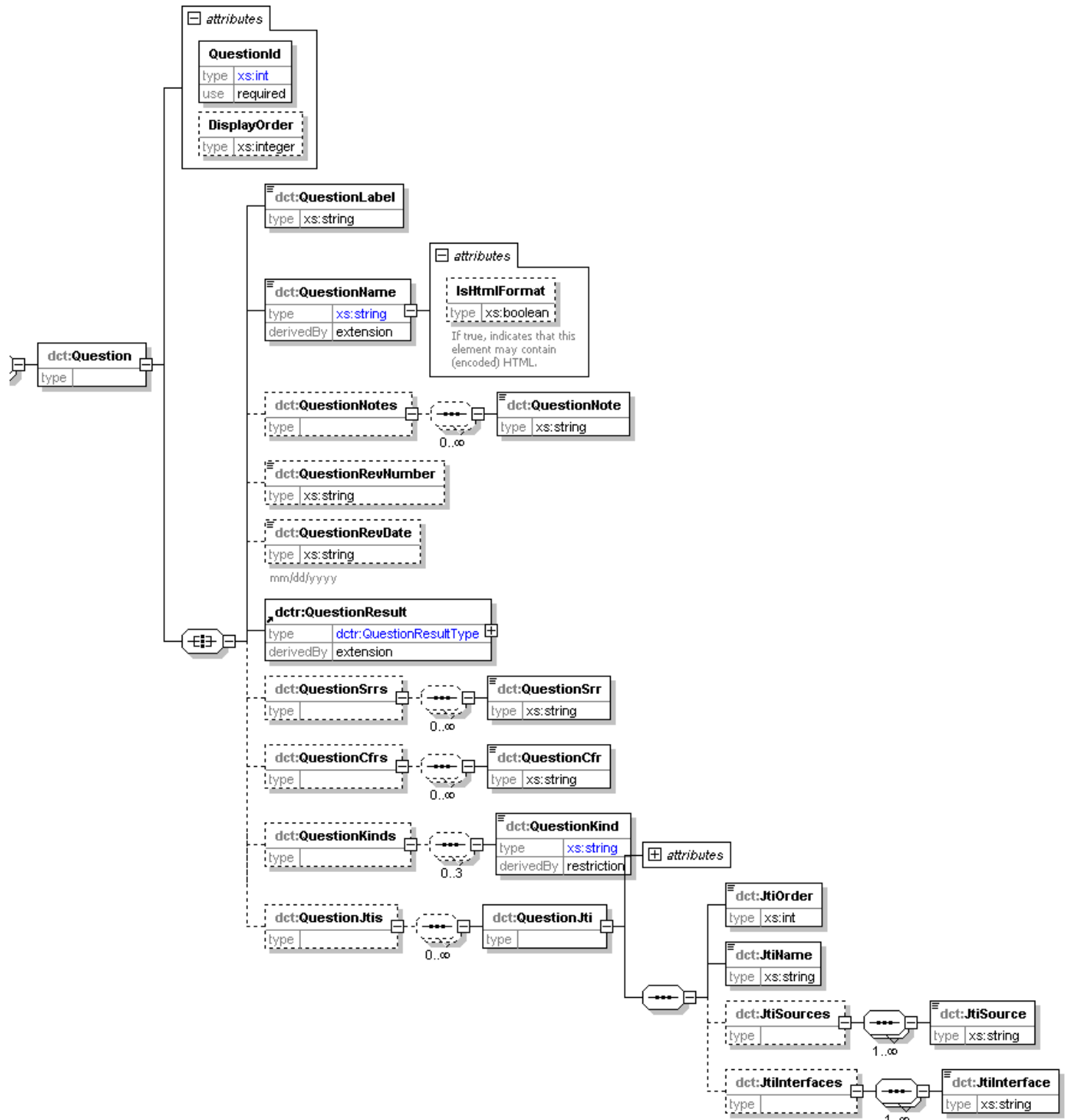
ElementSummary

SuppInfo

DCTSections expanded except Questions element

Questions Expanded except for dctr:QuestionResult element

dctr:QuestionResult